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PART IV-A

**Rules and Orders (Other than those published in Parts I, I-A, and I-L) made
by the Government of Gujarat under the Central Acts**

INDUSTRIES AND MINES DEPARTMENT

NOTIFICATION

Sachivalaya, Gandhinagar, 12th October, 2022.

MINES AND MINERALS (DEVELOPMENT AND REGULATION) ACT, 1957.

No. GU/2022/49/GMR/102022/209(1)/CHH: - In exercise of the powers conferred by section 15 of the Mines and Minerals (Development and Regulation) Act, 1957 (67 of 1957), the Government of Gujarat hereby makes the following rules further to amend the Gujarat Minor Mineral Concession Rules, 2017, namely:-

1. These rules may be called the Gujarat Minor Mineral Concession (Second Amendment) Rules, 2022.
2. In the Gujarat Minor Mineral Concession Rules, 2017 (hereinafter referred to as “the said rules”), in rule 4, after clause (a) in sub-rule (8), the following proviso shall be inserted, namely:-

“Provided that, nothing contained hereinabove shall prejudice the rights of the Government to carry out exploration and e-auction of any mineral rich area on its own accord.”.
3. In the said rules, in rule 7, in sub-rule (1) for clause (c), the following clause shall be substituted, namely:-

“(c) All technically qualified bidders shall qualify as qualified bidders for participating in the second round of electronic auction.”.
4. In the said rules, in rule 8,
 - (i) after sub-rule (1) the following sub-rule shall be inserted, namely:

“(1A) In case the preferred bidder fails to submit the first installment of the upfront payment within the period specified in sub-rule (1), the Government, in addition to disqualifying the preferred bidder, may—

- (i) Forfeit the bid security from the bidder towards liquidated damages;
 - (ii) de-bar such bidder from taking part in any future auction for a period of two years; and,
 - (iii) offer the bidder who had submitted second-highest price offer in the second round of auction to meet the highest final price offer and if the said bidder agrees to the said offer in writing and submits the first installment of upfront payment within thirty days of receipt of offer, the Government shall declare said bidder as the “preferred bidder” and issue letter of intent in accordance with sub-rule (2).”.
- (ii) in sub-rule (3),
- (a) after the existing proviso, following proviso shall be inserted, namely:-
- “Provided that, notwithstanding anything contained in these rules, the Government may relax provisions of this sub-rule if deems fit.”
- (b) the second proviso shall be deleted.
- (iii) in sub-rule (4), for the word “eighty”, the word “twenty” shall be substituted.
- (iv) for sub-rule (5), the following sub-rule and the proviso thereunder shall be substituted, namely:
- “(5) The quarry lease deed shall be executed by the Government within sixty days from the order for the grant of quarry lease subject to the payment of remaining sixty percent of the upfront payment, and the date on which a duly executed quarry lease deed in Form B is registered shall be the date of commencement of the quarry lease and the successful bidder shall ensure that it achieves registration of the quarry lease deed within thirty days from the date of its execution. The Government shall have the right to forfeit the performance security provided by the successful bidder in the event that the successful bidder fails to register the quarry lease within the prescribed period of thirty days. In such cases, the order for grant of quarry lease shall become void.

Provided that where the Commissioner of Geology and Mining is satisfied that the applicant is not responsible for the delay in the execution of the lease deed, he may permit the execution of the lease deed even after the expiry of the said period of sixty days. For the period of more than one year from the date of execution of lease deed, the matter shall be referred to the Government, whose decision shall be final.

Provided further that the District Collector may, for the reasons to be recorded in writing, extend the period specified in sub-rule (5), for registration of lease deed, for a further period, which shall not exceed four months from the date of execution:

Provided also that, owing to unavoidable circumstances, any lease deed is not registered till after the expiration of the time hereinbefore prescribed in that behalf, the Commissioner of Geology and Mining, in cases where the delay in registration exceeds four months, and the Government, in cases where the delay in registration exceeds eight months, may direct that, on payment of an amount equal to the dead-rent for one year, such lease deed shall be allowed to be registered subject to the provisions laid down under the Indian Registration Act, 1908:

Provided also that, wherein the registration of the lease deed has been delayed and the said delay is condoned by the Government, the date of commencement of lease period shall be the date of expiry of the time-period stipulated in this sub-rule.”.

5. In the said rules, in rule 9, for sub-rule (2), the following sub-rule shall be substituted, namely:-

“(2) The upfront payment shall be payable to the Government in three instalments of twenty per cent, twenty per cent and sixty per cent in respect of the minerals for which a quarry lease is granted. The upfront payment shall be adjusted in the manner specified by the Government in the tender document, within the first five years of the commencement of production of the mineral.”.

6. In the said rules, in rule 12, after sub-rule (4), the following sub-rule shall be added, namely:

“(4A) Notwithstanding anything contained in these rules or any other law for the time being in force, all valid rights, approvals, clearances, licences and the like granted to a lessee in respect of a mine shall continue to be valid even after expiry or termination or lapse of lease and such rights, approvals, clearances, licences and the like shall be transferred to, and vested; subject to the conditions provided under such laws; in the successful bidder of the mining lease selected through auction under these rules.”.

7. In the said rules, in rule 13, (i) in sub-rule (1) for the existing provisos the following provisos shall be substituted, namely:

“Provided that in case of minerals specified in Part A-I of Schedule III, the Commissioner of Geology and Mining may, for the reasons to be recorded in writing, grant a quarry lease for an area which is less than one hectare.

Provided further that in case of minerals specified in Part A-II and Part-B of Schedule III, the Government may, for reasons to be recorded in writing, grant a quarry lease for an area which is less than one hectare.”.

- (ii) after sub-rule (1), the following sub-rule shall be inserted, namely:-

“(1A) In case of sand, kankar and gravel, the quarry lease shall be granted for the maximum area not exceeding 10 hectares.”

8. In the said rules, after CHAPTER II, following chapter shall be inserted, namely:-

“Chapter-IIA: GRANT OF QUARRY LEASE IN PRIVATE LAND

16A. Grant of Quarry Leases. –

- (1) Save as otherwise expressly provided in these rules, the provisions of these rules in relation to the grant of quarry leases in accordance with Chapter-II shall also be applicable in relation to the quarry leases granted under this Chapter.
- (2) No quarry lease shall be granted to any person other than the owner or co-owner of an undivided family property, as the case may be, of the land himself or holder of consent of an area in respect of which a quarry lease has proposed to be granted.
- (3) No quarry lease shall be granted to the holder of consent, under sub-rule (1), for minor mineral in the Scheduled Area.

16B. Application for quarry lease. –

- (1) An application for the grant of a quarry lease in respect of a private land shall be made in triplicate in Form A1 to the Government. The applicant shall also pay the following amount of non-refundable Application fee for processing of such lease application, namely:-
 - (A) **For quarrying minor mineral specified in Part-AI of Schedule-III,-**
 - (i) rupees ten thousand.
 - (B) **For quarrying minor minerals Part-AII and Part-B,-**
 - (i) rupees twenty thousand.
- (2) The application shall also be accompanied with an exploration report of up to G4 level as specified in Schedule-I and up-to-date certified copies of the relevant extracts of the records of rights pertaining to the lands in respect of which quarry lease is applied for.

16C. Grant of quarry lease. –

- (1) On receipt of an application for the grant of a quarry lease under rule 16B, the Government after making such enquiries as it deems fit, may grant the quarry lease over a part or the whole of the area applied for, to the applicant:
- (2) Where a quarry lease is granted under sub-rule (1), the requisite lease deed shall be executed in the manner specified in rule 8.

16D. Restriction on area of quarry lease. – No quarry lease shall be granted for an area exceeding four hectares under the provisions of this Chapter.

16E. Period of the lease. –The period of quarry lease in case of minerals specified in Part-AI of Schedule-III shall not exceed five years and the period of quarry lease in respect of minerals specified in Part-AII and Part-B of Schedule-III shall not exceed thirty years.

16F. Payment of Premium.-The owner of the land/co-owner of an undivided family property, as the case may be, or the holder of consent, respectively, shall pay, in addition to the royalty and other charges, an amount equivalent to one hundred per cent of royalty or two hundred per cent of royalty, respectively, towards premium.

16G. Applicability of the rules.- The Government shall treat every lease that has been granted under this Chapter as the same has been granted by way of auction and the grant of lease under this Chapter shall be subject to the fulfilment of the terms and conditions that has been imposed upon the leases that have been granted by way of auction under these rules.”.

9. In the said rules, in rule 23, in sub-rule (1), in clause (a), in sub-clause (iv) for the figures and word “180 days”, the figures and word “365 days” shall be substituted.
10. In the said rules, in rule 29, —
 - (i) in sub-rule (3), for the words ‘five years’ occurring at two places, the words ‘eight years’ shall be substituted.
 - (ii) after sub-rule (7), the following provisos shall be added, namely:-

“Provided that the District Collector may, for the reasons to be recorded in writing, extend the period specified hereinabove, for registration of lease deed, for a further period, which shall not exceed four months from the date of execution:

Provided further that, owing to unavoidable circumstances, any lease deed is not registered till after the expiration of the time hereinbefore prescribed in that behalf, the Commissioner of Geology and Mining, in cases where the delay in registration exceeds four months, but does not exceed eight months, may direct that, on payment of an amount equal to the dead-rent for one year, such lease deed shall be allowed to be registered subject to the provisions laid down under the Indian Registration Act, 1908:

Provided also that, owing to unavoidable circumstances, any lease deed is not registered till after the expiration of the time hereinbefore prescribed in that behalf, the Government, in cases where the delay in registration exceeds eight months, may direct that, on payment of an amount equal to the dead-rent for one year, such lease deed shall be allowed to be registered subject to the provisions laid down under the Indian Registration Act, 1908:

Provided also that, wherein the registration of the lease deed has been delayed and the said delay is condoned by the Government, the date of commencement of lease period shall be the date of expiry of the time-period stipulated in this sub-rule.”.
11. In the said rules, in rule 42, in sub-rule (1), for the existing proviso, the following proviso shall be substituted, namely:-

“Provided that the lessee may make a written application to the Government in Form K for surrender of a part of the area under quarry lease for the reason that further excavation is not safe or it is not possible to carry out mining in a systematic and scientific manner or if such area is barren or the deposits of minerals have since exhausted or depleted to such an extent that it is no longer economical to excavate such area or for any other reason beyond the control of the lessee, after giving a notice in writing of not less than six calendar months from the intended date of surrender. Such application shall be accompanied by an approved final mine closure plan.”.
12. In the said rules, in rule 54, for the words ‘eighteen percent’, the words ‘twelve percent’ shall be substituted.
13. In the said rules, in rule 64, for sub-rule (3), the following sub-rule shall be substituted, namely:-

“(3) Release of financial assurance shall be effective upon the notice given by the lease holder for the satisfactory compliance of the provisions contained in the mine closure plan and certified by the committee comprising of two members, one Geologist/Assistant Geologist and Prant Officer of the concerned District.”.
14. In the said rules, in rule 79, in sub-rule (1), after clause (b), the following clause shall be added namely:-

“(c) if at the time of auction, exploration up to level of reconnaissance mineral resources (334) had been completed and included in geological report forming part of the tender document, within a period of two years from the registration of the relevant lease deed:

 - (i) complete exploration to establish indicated mineral resources (332) as per Part I of Schedule I; and
 - (ii) prepare and submit a pre-feasibility study report conforming to Part II-B of Schedule I.”.
15. In the said rules, for rule 82, the following rule shall be substituted, namely:-

“82. Power of State Government to issue directions.-

 - (1) Notwithstanding anything contained in this Rules, the State Government may issue such directions, as may be required for the conservation of minerals resources, or on any policy matter in the state interest, and for the scientific and sustainable development and exploitation of mineral resources.
 - (2) In particular, and without prejudice to the generality of the forgoing powers, the State Government may also issue directions in respect of the following matters, namely:-

- (i) improvement in procedure for grant of mineral concessions and to ensure co-ordination among agencies entrusted with according statutory clearances;
- (ii) minimising and mitigating adverse environmental impacts particularly in respect of ground water, air, ambient noise and land;
- (iii) ensuring minimal ecological disturbance, in terms of bio-diversity, flora, fauna and habitat;
- (iv) promoting restoration and reclamation activities so as to make optimal use of mined out land for the benefit of the local communities; and
- (v) such other matters as may be necessary for the purposes of implementation of this Rules.

16. In the said rules, in rule 90A, for sub-rule (2), the following sub-rule shall be substituted, namely:-

“(2) If the legal heir of the deceased fails without sufficient cause to furnish the information referred to in sub-rule (1), a fine of Rs. Ten thousand shall be imposed for the delay of every one hundred and eighty days by the District Collector:

Provided that, where such intimation is received in time, the Granting Authority for such quarry lease shall be the Competent Authority to take decision. In case, where such intimation is not received within two years, the matter shall be referred to the State Government, whose decision shall be final:

Provided further that in the case of continued contravention of the provisions of sub-rule (1), the Government may terminate the mineral concession:

Provided also that, no such termination order shall be made without giving the legal heir a reasonable opportunity of stating his case.”

17. In the said rules, for Schedule I, the following Schedule shall be substituted, namely:-

“SCHEDULE I:

EVIDENCE OF MINERAL RESOURCES

(See rules 3, 4(1), 4(2), 6(1)(b) and 6(2))

1. Existence of mineral resources shall have to be established in an area for the purpose of auction of a quarry lease by carrying out exploration as per the suggested geological parameters and exploration norms given in Part-I of this Schedule.

2. **Existence of mineral resources for auction of Quarry Lease:**

- (1) **Part-A of Schedule-III minerals:**

An area shall be considered to have evidence of the existence of mineral resources for grant of a quarry lease over an area if, in respect of such area:

- (a) existence of mineral resources has been established after carrying out exploration upto General Exploration (G2) over the area to establish Indicated Mineral Resource (332) as per suggested geological parameters and exploration norms given in Part-I of this Schedule; and
 - (b) a geological study report has been prepared conforming to Part-II A of this Schedule;

- (2) **Part-B of Schedule-III minerals:**

An area shall be considered to have evidence to show the existence of mineral resources for grant of a quarry lease over an area if, in respect of such area:

- (a) existence of mineral resources has been established after carrying out exploration upto Preliminary Exploration (G3) over the area to establish Inferred Mineral Resource (333) or General Exploration (G2) over the area to establish Indicated Mineral Resource (332)

as per suggested geological parameters and exploration norms given in Part-I of this Schedule;

- (b) a geological study report has been prepared conforming to Part-II A of this Schedule:

Provided that in case of auction of mineral block, the “estimated quantity of mineral resources” shall be arrived in the following manner, namely:-

(A) the estimated quantity of mineral resources as assessed under G4 level of exploration for the mineralised area in the block shall be considered as the “estimated quantity of mineral resources” of the block;

(B) in case the “estimated quantity of mineral resources” is not possible to be assessed under clause (A), then the same shall be arrived at by multiplying,-

(i) the average of the estimated quantity of mineral resource per hectare for the same mineral available in the mineralised area of nearby mining leases or mineral blocks having similar geological features and explored up to G3 level in accordance with the said rules; and

(ii) the mineralised area of the mineral block which is to be auctioned.

Explanation.—For the purposes of this clause “nearby mining leases or mineral blocks” shall mean mining leases or mineral blocks located in the same district or in any adjacent district.”

3. Grant of a quarry lease through auction in respect of quarry leases after expiry of the quarry lease period and of leases which have been surrendered, determined or lapsed.

An area shall be considered to have evidence to show the existence of mineral resources for grant of a quarry lease over an area, upon termination, expiry, lapse or surrender of a quarry lease, if detailed reassessment of resources as per Clause 2 stated above is carried out:

Provided that detailed reassessment of resources shall not be required to be carried out in cases where the estimate of mineral resource required for auction can be assessed on basis of the available report of exploration or geological study report or last approved mining plan for the said area, after adjusting for the mineral already produced from the mine.

4. Relaxation

Depending upon the local geological setup, mode of occurrence and nature of mineralization, the Government may relax the exploration norms as specified in Part-I and Part-II of this Schedule, in whole or in part for any mineral or any area.

Part – I A

DEFINITIONS

1. The definitions and codes used in this Part are drawn mainly from the United Nations Framework Classification (UNFC) and Committee for Mineral Reserves International Reporting Standards (CRIRSCO) Template and have been suitably modified to suit the needs of the country.

(a) Definition of stages of exploration:

The exploration for any mineral deposit involves four stages namely, Reconnaissance Survey (G4), Preliminary Exploration (G3), General Exploration (G2) and Detailed Exploration (G1) and these stages of exploration lead to four resource categories, namely, Reconnaissance Mineral Resource, Inferred Mineral Resource, Indicated Mineral Resource and Measured

Mineral Resource respectively reflecting the degree of geological assurance, which are explained as follows:

Sl. No.	Stages of Exploration	Definition with explanation
1	Reconnaissance Survey (exploration) (G4) Quantity with grade estimated mostly based on indirect evidences	Reconnaissance Survey (G4) identifies areas of enhanced mineral potential based primarily on results of regional geological studies, regional geological traverses and mapping, airborne geophysical survey, remote sensing or satellite data study; identifying the mineralised zones through spectral signatures; combination of geophysical surveys like ground gravity and magnetic, Resistivity surveys, Induced Potential (IP) surveys and other such advanced techniques; geochemical study and other indirect methods as well as geological inference and extrapolation; delineation of mineralised area boundaries and surface contouring by Lidar and Drone surveys and sampling data from existing pits, old workings, nala cuttings, dug wells etc., and also sampling data extrapolated from nearby mining lease areas or explored blocks having similar surface geological features may be used for assessment of resources, if possible. Limited ground truthing by means of few drill-holes, as may be required, may be carried out to substantiate the information so collected and assess the quantity and grade of resources, if any.
2	Preliminary Exploration(G3) Quantity with grade estimated with low level of confidence	(1) Preliminary Exploration involves the initial delineation of an identified mineral deposit area of previous stage by furthering the exploration to extend and identify both laterally and vertically down (third dimension) of the ore body. The methods utilised are outcrop identification, surface geological mapping, and indirect methods such as geophysical and geochemical studies or mapping on appropriate scale based on nature of mineralisation. Limited wide spaced pitting or trenching and drilling to ensure maximum core recovery depending on the geological formation with appropriate spacing to understand nature, style and control of mineralisation followed by systematic sampling to identify a deposit, which shall be the target for further exploration. (2) Estimates of quantities are inferred, based on interpretation of geological, geophysical, geochemical and geo-technical investigation results. Certain degree of extrapolation beyond the normal sample spacing may be allowed with proper justification depending upon the style and mode of occurrence of a mineral deposit.
3	General Exploration (G2) Quantity with grade estimated with moderate level of confidence	General Exploration involves increasing the geological confidence level and understanding style and mode of occurrence of mineralisation. Methods used include surface geological mapping (if not done in the previous stage of exploration), pitting or trenching or drilling (appropriate spacing closer than the previous stage, according to nature of mineralisation), followed by sampling for evaluation of mineral quantity and quality (including beneficiation tests on laboratory scale if required). The objective is to establish the main geological features of a deposit, giving a reasonable indication of continuity along lateral and vertical (third

Sl. No.	Stages of Exploration	Definition with explanation
		dimension) extensions which provide an initial estimate of size, shape, structure of mineralised zone, quantity and grade of the mineral deposit.
4	Detailed Exploration (G1) Quantity with grade estimated with high level of confidence	Detailed Exploration involves the detailed three-dimensional delineation of a known mineral deposit achieved through sampling, such as from outcrops, pits, trenches, boreholes, shafts and tunnels etc. Sampling locations are closely spaced such that size, shape, structure, quantity, grade and other relevant characteristics of the deposit are established with a high degree of accuracy. Bench scale beneficiation tests involving bulk sampling may be required in certain cases to understand the recovery and any additional by-products.

(b) Definition of stages of feasibility study:

Sl. No.	Category	Definition with explanation
1	Geological Study (F3)	A geological study involves reporting of all the exploration activities undertaken during each stage of exploration including the assessment of the mineral resources with quantity and grade. A preliminary economic evaluation of the deposit should be done based on the gathered field data and a comparison with the similar deposits already in operation. This is achieved by applying meaningful threshold values, cut off values for grade, thickness and depth of the mineralised zone.
2	Pre-Feasibility Study (F2)	Pre-Feasibility Study is the study to demonstrate the possible techno-economic and socio-environmental viability of a mineral deposit through application of various modifying factors wherein a preferred mining method has been ascertained including the mineral beneficiation method, if any. The study shall also include a preliminary financial analysis based on reasonable assumptions on the applicable modifying factors and the evaluation of any other relevant factors which are sufficient to convert all or part of the resources to reserves. The study should lead to part or whole of the Mineral Resource being converted to Mineral Reserve. A Pre-Feasibility Study has a lower confidence level than a Feasibility Study (wherein the cost estimates of the project shall have $\pm 30\%$ degree of accuracy).
3	Feasibility Study (F1)	Feasibility Study is a detailed comprehensive techno-economic and socio-environmental evaluation of a mineral deposit through application of various modifying factors to establish the technical feasibility, economic and financial viability of a mineral deposit. At this stage the preferred mining method, beneficiation technology of the deposit has been adequately established with detailed assessments of the applicable modifying factors, relevant operational factors and detailed financial analysis to demonstrate that extraction is reasonably justified. It is expected that all Governmental clearances to start mining operations are already in place and where such clearances have not been obtained on the date of commencement of the Minerals (Evidence of Mineral Contents) Amendment Rules, 2021, the same shall be obtained in due course. The study may lead to part or whole of the Mineral Resource being converted to Mineral Reserve. The result of the study may reasonably serve as a basis for final decision by a proponent or financial institution to proceed with or finance the development of the project (wherein the cost estimates of the project shall have $\pm 20\%$ degree of accuracy).

Sl. No.	Category	Definition with explanation
4	Modifying Factors	Modifying Factors are those factors which are taken into consideration while conducting a prefeasibility or feasibility study so as to convert mineral resources to mineral reserves. These include, but are not limited to, mining, processing, end use, cut-off grade, threshold value, metallurgical, infrastructure, economic, marketing, legal, environmental, social and Governmental factors.

(c) Definition of stages of economic viability:

Sl. No.	Category	Definition with explanation
1	Intrinsically Economic (E3)	Quantities, reported in tonnes or volume with grade or quality, estimated by means of a Geological Study identified to be of intrinsic economic interest, implying that the resources identified may or may not have any immediate economic value. The economic viability of the resources is further ascertained through a prefeasibility or feasibility study by application of appropriate modifying factors. The classes defined are Measured, Indicated, Inferred and Reconnaissance Mineral Resources.
2	Potentially Economic (E2)	Quantities with grade reported by means of a prefeasibility or feasibility study in order of increasing accuracy, not justifying extraction under the prevailing technological, economic, environmental and other relevant conditions, realistically assumed at the time of the determination, but possibly so in the future. The classes defined as per the mineral resources for which are pre-feasibility Mineral Resources and Feasibility Mineral Resources, including only indicated and measured resources.
3	Economic (E1)	Quantities with grade identified on the basis of a prefeasibility or feasibility study in order of increasing accuracy that justify extraction under the prevailing techno-economic, socio-environmental and other relevant conditions, realistically assumed at the time of the determination. The classes defined are Proved and Probable Mineral Reserves.

(d) Definition of classes of mineral resources and reserve:

Sl.No.	Classes	Definition with explanation
1	Mineral Resource	Mineral Resource is a concentration or occurrence of solid material in or on the earth's surface for which quantities with grade or quality have been estimated based on certain geological considerations and understanding which may or may not have any immediate or near-term economic value but are assessed for their future prospective value.
2	Reconnaissance Mineral Resource(334)	Reconnaissance mineral Resources (334) are estimates of quantity and grade based on indirect evidences including data and information generated through a reconnaissance survey, limited surface and sub-surface sampling data from within the exploration block or data extrapolated from nearby mining or explored areas as may be required. The quantity and grade estimates have a lower level of confidence than that of inferred mineral resources.
3	Inferred Mineral Resource (333)	(1) Inferred mineral resource is the quantity with grade associated with a mineral deposit which can be estimated with a low level of confidence. (2) This is achieved through application of appropriate exploration techniques involving widely spaced drilling, pitting, trenching etc. followed by appropriate sampling and analysis to assume geological continuity of the mineralised body, both laterally and vertically. Certain level of extrapolation beyond the sampling points may be allowed with suitable justification depending upon the type of

Sl.No.	Classes	Definition with explanation
		deposit and its mode of occurrence. (3) This resource cannot be converted to mineral reserve but may be upgraded to indicated mineral resource with additional information.
4	Indicated Mineral Resource (332)	(1) Indicated mineral resource is the quantity with grade associated with a mineral deposit which can be estimated with a moderate level of confidence. (2) This is achieved through application of appropriate exploration techniques involving close spaced drilling than the previous stage, pitting, trenching, etc., having spacing wider than that required for estimation of measured resources which ensures assumption of the geological continuity of the mineralised body, both laterally and vertically. This also includes the laboratory scale beneficiation studies to understand the recovery and by-products, if any. (3) Indicated Mineral Resource may be wholly or partly converted to Probable Mineral Reserve through a prefeasibility study.
5	Measured Mineral Resource (331)	(1) Measured mineral resource is the quantity with grade associated with a mineral deposit which can be estimated with a very high level of geological confidence. (2) This is achieved through application of appropriate exploration techniques involving sufficiently close spaced drilling, pitting, trenching etc. followed by appropriate sampling and analysis to ensure geological continuity of the mineralised body both laterally and vertically. Bench scale beneficiation studies to confirm the percentage recoverability with additional minerals, if any recovered. (3) Measured Mineral Resource may be wholly or partly converted to Proved or Probable Mineral Reserve through a feasibility or a prefeasibility study.
6	Mineral Reserve	Mineral Reserve is the economically mineable part of a Measured and/or Indicated Mineral Resource. It includes diluting materials and allowances for losses, which may occur when the material is mined or extracted. The quantity and grade of the mineral reserves is ascertained through suitable prefeasibility or feasibility study by application of appropriate Modifying Factors.
7	Proved Mineral Reserve (111)	Proved mineral reserve is the economically mineable part of a Measured Mineral Resource. The quantity with grade is demonstrated to be economically mineable by means of a feasibility study. A Proved Mineral Reserve implies a high degree of confidence in the Modifying Factors.
8	Probable Mineral Reserve (121 and 122)	(1) Probable mineral reserve is the economically mineable part of an Indicated, and in some circumstances, a Measured Mineral Resource. The quantity with grade is demonstrated to be economically mineable by means of a prefeasibility study. (2) The confidence in the Modifying Factors applying to a Probable Mineral Reserve is lower than that applying to a Proved Mineral Reserve.
9	Feasibility Mineral Resource(211)	Feasibility Mineral Resource is that part of Measured Mineral Resource which is not economically mineable and has been defined by studies at feasibility level as appropriate that extraction is presently not justified. This material is identified as being possibly economically viable subject to changes in technological, economic, and environmental or other relevant conditions.
10	Pre-Feasibility Mineral Resource(221 and 222)	Pre-feasibility Mineral Resource that part of an Indicated mineral resource, and in some circumstances Measured Mineral Resource, which is not economically mineable and has been defined by studies at Pre-feasibility level as not appropriate for extraction at present. This material is identified as being possibly economically viable subject to changes in technological, economic, and environmental and/or other relevant conditions.;

Part-I B**Geological Parameters and Exploration Norms**

1.The geological parameters and exploration norms differ for each type of mineralization/deposit and as per stage of exploration.

2.Geological Parameters for exploration:

1.	Aerial reconnaissance: Satellite imagery/ aerial photograph studies, as per necessity.
2.	Topographic and Geological survey (Mapping): Reconnaissance / preliminary Exploration stage: 1:50,000 to 1:25000 scale; General and Detailed Exploration stage: larger than 1:25000 scale i.e. from 1:500 to less than 1:25000 scale as per type of mineral deposit. Geological mapping during general and detailed exploration to be carried out with the help of total station. Exploration block to be geo-coordinated and delineate land details with the help of Differential Global Positioning System.
3.	Ground Geophysical and Geochemical survey: Geophysical and geochemical survey using appropriate techniques as may be necessary for the style of mineralization as per requirement.
4.	<p>Technological : Exploration and sampling using appropriate techniques from locations such as outcrops, trenches, pits, old workings and drill holes. The sampling locations are spaced suitably (in a grid pattern to the extent possible and may be modified depending on structural complexity) for establishing existence of mineralized body and its lateral and vertical continuity. Clause (4) of Part-I of this Schedule may be referred for further details.</p> <p>The lateral extension to be considered for resource assessment shall depend on geological considerations supplemented by geological continuity by mapping or by other means and in any case shall not be more than 50% of the grid spacing of the probe points.</p> <p>Assessment based on selected information such as isolated assays, isolated drill holes, assays of panned concentrates etc. is not recommended.</p>
5.	<p>Sampling and sub-sampling:</p> <p>(a) Random grab/chip/channel sampling from surface exposure/escarpments/ nallah cuttings/ pit/channel etc.</p> <p>(b) Systematic sampling from pits/trenches/outcrops/workings etc. spaced closely enough to confirm geological and grade continuity for other stages of geological assessment.</p> <p>(c) Geological logging and sampling of drill core/chip samples at regular interval, preferably metre wise or less for the mineralized portions.</p> <p>(d) The drill technique to be deployed shall depend on the rock type to be penetrated and with an aim to achieve maximum sample/core recovery.</p> <p>The exploration samples including surface samples, drill core/ chip samples shall be preserved, for future use.</p>
6.	Assay data and Laboratory tests: Analysis of all samples generated for major radicals appropriate to the mineral under investigation.
7.	Petrographic and Mineragraphic studies: Petrographic analysis of mineralized portions to ascertain the rock types and mineral assemblages including grain size, texture, gaunge and its liberation characteristics etc. if considered necessary.
8.	Bulk density study: The bulk density must be measured by methods that adequately account for incipient void spaces (vugs, porosity, etc.) in mineral /ore body.
9.	Bulk sampling for Beneficiation studies: Bulk sampling if necessary for testing processing technology.
10.	Environmental setting: Details about local infrastructure, host population, historical sites, forests, sanctuaries, national park and base line information on environmental setting of the area to be collected.
11.	Any other relevant data: Groundwater, geotechnical and rock characteristics etc. that may be relevant.

3.Suggested Exploration norms (category-wise) for different types of minor mineral deposits/ mineralization

Category	Type of deposit and Principal Minerals	Reconnaisance Survey (G-4)	Preliminary Exploration (G-3)	General Exploration (G-2)	Detailed Exploration (G-1)
A	I. Bedded Stratiform and tabular deposits of regular and irregular habit: 1. Blacktrap (Road Metal), Building Stones (Building Limestone, Calc-gneiss, Gabbro, Phyllite, Quartzite, Sandstone, Slate, Trachyte, Others), and Ordinary Clay.	Not necessary	1. Geological survey: i. Mapping on 1:50,000 scale to 1:25,000 scale as per size of the prospect. ii. Broad assessment of lithology, structure, surface extension of mineral. iii. Recording of broad geomorphology, drainage, weather profile. 2. Geochemical Survey: not necessary 2. Ground geophysical survey: not necessary. 4. Technology : i. Pitting Trenching: not necessary ii. Scout drilling: not necessary. iii. Sampling: Regional and random grab / chip sample for geotechnical, specific gravity studies as per necessity. iv. Bulk density/ specific gravity. 5. Integration of all data and identification of blocks for further exploration.	1. Geological Survey: i. Mapping on 1:1,000 scale to < 125,000 scale Mapping (geological and topographic) to be carried out with the help of Total station instrument. ii. Exploration block to be geo-coordinated and land details to be delineated with the help of DGPS. iii. Assessment of lithology, structure, surface extension of mineral. iv. Recording of geomorphology, drainage, weather profile. 2. Geochemical Survey: not necessary 3. Geophysical survey: not necessary. 4. Technology: i. pitting/ trenching: 2 to 5 per sq km/per prospect. ii. Drilling: not necessary. iii. Sampling: systematic grab, chip, pit and trench sampling for geotechnical studies. iv. Geotechnical studies: measurement	Not necessary

Category	Type of deposit and Principal Minerals	Reconnaissance Survey (G-4)	Preliminary Exploration (G-3)	General Exploration (G-2)	Detailed Exploration (G-1)
				of compressive strength, tensile strength etc., if necessary. v. Bulk density / specific gravity study.	
	<p>2. Brick-earth, Ordinary Earth, Soft Murrum, Hard Murrum.</p> <p>II. Placers and residual refractory mineral deposit of hill and valley wash</p> <p>1. Boulder, Chalcedony pebbles, Kankar, Gravel, Ordinary Sand and Quartzite Pebbles.</p>	Not necessary	<p>1. Geological Survey:</p> <p>i. Mapping on 1:25,000 or smaller scale as per prospect size. Broad delineation of ordinary sand, gravel etc.</p> <p>ii. Recording of geomorphology, landform etc.</p> <p>2. Geochemical Survey: not necessary.</p> <p>3. Geophysical Survey: not necessary.</p> <p>4. Technological:</p> <p>i. Trenching: not necessary.</p> <p>ii. Pitting: Test pits as per need for estimating thickness of sediment.</p> <p>iii. Bulk density/ specific gravity.</p> <p>5. Integration of all data and identification of blocks for further exploration.</p>	<p>1. Geological Survey:</p> <p>i. Mapping on 1:1,000 scale to < 1:25,000 scale. Mapping (geological and topographic) to be carried out with the help of Total station instrument.</p> <p>ii. Exploration block to be geo-coordinated and land details to be delineated with the help of DGPS.</p> <p>iii. Assessment of lithology, surface extension of mineral.</p> <p>iii. Detailed geomorphology, drainage pattern.</p> <p>2. Geochemical Survey: not Necessary.</p> <p>3. Geochemical Survey: not Necessary.</p> <p>4. Technology:</p> <p>i. Pitting 2 to 5 per sq km or per prospect to know the depth extension.</p> <p>ii. Drilling: one or</p>	Not necessary

Category	Type of deposit and Principal Minerals	Reconnaissance Survey (G-4)	Preliminary Exploration (G-3)	General Exploration (G-2)	Detailed Exploration (G-1)
				<p>two augur drilling per prospect to know the depth extension, as per necessity.</p> <p>iii. Sampling: of pit and trench/ Core / sludge for Petrographic and geo-technical studies as per necessity.</p> <p>iv. Bulk density/ specific gravity.</p>	
B	<p>I. Bedded Stratiform and tabular deposits of regular and irregular habit:</p> <p>1. Ball Clay, Red clay Lithomargic Clay, Pozzolan Clay, Natural Clay, Diatomaceous Clay, Bentonite, Chalk, Dolomite, Fireclay, Fuller's Earth, Gypsum, Laterite, Limekankar, Quartzite, Sand (Others), Moulding Sand and Silica Sand.</p>	Not necessary	<p>1. Aerial Reconnaissance: Remote sensing, aerial photographic studies as per necessity.</p> <p>2. Geological survey:</p> <p>i. Mapping on 1:50,000 scale to 1:25,000 scale as per the size of the prospect.</p> <p>ii. Assessment of lithology, structure, surface mineralization extent.</p> <p>iii. Recording of broad geomorphology.</p> <p>3. Geochemical Survey:</p> <p>i. Grab/chip sampling of rocks.</p> <p>4. Ground geophysical survey: Not Necessary</p> <p>5. Technology :</p> <p>i. Pitting Trenching: One or two to expose mineralized zone at ideal location.</p> <p>ii. Drilling: one or two per prospect.</p> <p>iii. Sampling: Trench/pit/ core sample for chemical analysis.</p> <p>iv. Bulk density/ specific gravity measurement.</p> <p>6. Petrographic and mineralogical studies, as</p>	<p>1. Geological Survey:</p> <p>i. Mapping on 1:1,000 scale to < 1:25,000 scale. Mapping (geological and topographical) to be carried out with the help of Total station instrument.</p> <p>ii. Exploration block to be geo- coordinated and land details to be delineated with the help of DGPS.</p> <p>iii. Assessment of lithology, structure, mineralization extent.</p> <p>2. Geochemical Survey:</p> <p>i. Lithogeochemical and channel sampling in grid pattern.</p> <p>ii. Recording of deleterious elements.</p> <p>3. Geophysical survey: if necessary.</p> <p>4. Technology:</p> <p>i. Pitting: 2 to 5 per sq km or per prospect.</p> <p>ii. Trenching: at spacing of 200- 500m.</p> <p>iii. Drilling: The grid spacing of bore holes may be 800m or closer for deposits of regular habit and 400 m or closer for</p>	Not necessary

Category	Type of deposit and Principal Minerals	Reconnaissance Survey (G-4)	Preliminary Exploration (G-3)	General Exploration (G-2)	Detailed Exploration (G-1)
			per necessity. 7. Integration of all data and identification of blocks for further exploration.	irregular habit. Drilling technique depends on rock type. iv. Sampling: systematic pit and trench sampling. Core / sludge sampling mineralization wise. v. Laboratory scale scanning/ chemical analysis. vi. Bulk density /specific gravity study. 5. Petrographic and minerographic studies: as per necessity.	
	2. Dimension Stones (ornamental type) coloured varieties including: i. Granite (Granite means dolerites, granite gneisses, migmatites, gabbros,	Not necessary	1. Geological Survey: i. Mapping on 1:25,000 or smaller scale as per prospect size. ii. Recording of broad geomorphology and weather profile. 2. Geochemical Survey: Not necessary 3. Geophysical Survey: Not necessary. 4. Technological: i. Pitting/ Trenching/ drilling: Not Necessary ii. Sampling: one grab of fresh rock prospect of premium variety for geotechnical and petrographic study. iii. Geotechnical studies: a. Joint fracture density study and preliminary assessment of blockability and polishing index. b. Bulk density /specific gravity study. 5. Petrographic studies: Texture and micro-texture study. 6. Integration of all data and identification of blocks for further exploration.	1. Geological Survey: i. Mapping on 1:1,000 scale to < 1:25,000 scale. Mapping (geological and topographic) to be carried out with the help of Total station instrument. ii. Exploration block to be geo- coordinated and land details to be delineated with the help of DGPS. iii. Assessment of lithology, structure, surface extension of mineralization etc. iv. Recording of geomorphology, drainage, weather profile. 2. Geochemical Survey: Identification of deleterious constituents. 3. Geophysical survey: if necessary. 4. Technology: i. Pitting/ trenching: one or two per prospect.	Not necessary

Category	Type of deposit and Principal Minerals	Reconnaissance Survey (G-4)	Preliminary Exploration (G-3)	General Exploration (G-2)	Detailed Exploration (G-1)
				ii. Drilling: one or two per prospect. iii. Sampling: two to three grabs per prospect. iv. Geotechnical: further refinement of blockability data, polishing index measurement, measurement of compressive strength, tensile strength etc. v. Bulk density /specific gravity study. 5. Petrographic and minerographic studies: colour, granularity, inclusion, texture etc. As per necessity.	
	II. Lenticular bodies of all dimensions including bodies occurring en echelon, silicified linear zones of composite veins. Lenses, pockets, stock- works; irregular shaped modest to small sized bodies 1. Agate, Calcite, Clay (Others), Feldspar, Ochre, Quartz, Steatite or Talc or Soapstone, China Clay, Kaolin, and White Clay.	Not required	1. Geological Survey: i. Mapping on 1:50,000 to 1:25,000 scale. ii. Assessment of lithology, mineral extension, structure etc. iii. Broad study of geomorphology and landforms. 2. Geochemical Survey: Sampling of rock chip, grab. 3. Geophysical Survey: if required. 4. Technological: i. Pitting and scout drilling: up to 5 test pits/boreholes on 400m grid pattern. ii. Sampling: sampling of pit and cores for deciphering the mineralized zone. iii. Bulk density/ specific gravity measurement. 5. Petrographic and minerographic studies, if necessary.	1. Geological Survey: i. Mapping on 1:1,000 scale to < 1:25,000 scale. Mapping (geological and topographic) to be carried out with the help of Total station instrument. ii. Block to be geo-coordinated and delineate land details with the help of DGPS. iii. Assessment of lithology, structure, surface aerial extent of /mineralization. 2. Geochemical Survey: i. Detailed litho-geochemical and channel sampling in grid pattern for further refining of data. ii. Identification of deleterious elements.	Not required

Category	Type of deposit and Principal Minerals	Reconnaissance Survey (G-4)	Preliminary Exploration (G-3)	General Exploration (G-2)	Detailed Exploration (G-1)
			6. Integration of all data and identification of blocks for further exploration.	3. Geophysical survey: only if necessary. 4. Technology: i. Pitting / trenching: at spacing of 200- 500m. ii. Drilling: The grid spacing of bore holes may be 200m or closer iii. Sampling: systematic pit and trench sampling. Core / sludge sampling mineralization wise. iv. Laboratory scalescanning/ chemical analysis. v. Bulk density /specific gravity study. 5. Petrographic and minerographic studies, as per necessity.	

Part-II A

REPORTING OF MINERAL RESOURCES

Standard Template for a Geological study Report which shall also form a part of the pre-feasibility or feasibility report

1. A Geological Study Report for estimation and reporting of Mineral Resources integrating all data of exploration, sampling and testing generated through geophysical (aerial and ground), geochemical, geological surveys and technological study shall be undertaken for every stage of exploration, i.e., from G4 to G1 for assessing the resources.
2. Mineral resource assessment is normally a collective effort involving a multidisciplinary approach. It is expected that individuals/ subject matter experts involved in each part of the report preparation are given due credit for that part with proper acknowledgement in the report and also, they are willing to take due responsibility regarding the accuracy and authenticity of that part. However, the final responsibility of the report shall lie with the lead expert or a group of experts who, after proper due diligence of all the parts of the report have arrived at the final estimation of the resources and reserves and are convinced about the methodology and processes followed in arriving at the resource estimates. These experts taking the final responsibility for the report shall be referred to as the qualified persons and shall certify the report by signing off the report with their credentials.

Sl. No.	Criteria with parameters of reporting
1.	Executive Summary
i	The executive summary shall include details about the location of the mineral deposit, purpose of the mineral investigation and the stage of the exploration, brief geology, mineralization, exploration plan with spacing of the sample points, depth of exploration and whether the mineralisation extends beyond the depth of direct evidence. Outcome of the exploration studies including the quantity of resources identified with grade and quality under various classes.
ii	The summary shall also include observation on the issues regarding the future plan or strategy for the deposit including likely mineability of the deposit based on present technological, environmental, social and market conditions.

Sl. No.	Criteria with parameters of reporting	
2.	Details of the Qualified Person(s) / Exploration Agency (To be provided separately for all the qualified persons signing off the report)	
	i	(a) Name: (b) Address: (c) Contact Mobile No: (d) E-Mail id: (e) Qualification: (f) Experience: (g) Affiliation to any organization/ company, if yes, specify the name of the organisation or company:
	ii	Details of qualification and experience of persons associated with various aspects of exploration assessment of resources and reserves
3.	Title and ownership	
	i	Name of the explorer/ Mining or prospecting rights holder: Address: Telephone No: E-Mail i.d.:
	ii	Details of period of prospecting/mineral right if any: In case of a licence or lease: a) Date of grant: b) Date of execution: c) Period of licence or lease: d) Period of completion:
4.	Details of the Area Under Study	
	(i)	Village, District, State
	(ii)	Survey of India Toposheet No., Differential Global Positioning System(DGPS) coordinates of all corner points of the area and borehole points in latitude and longitude (Degree Minutes Second) format WGS-84 Datum
	(iii)	Cadastral details of the area with land use, area under forest with type of forest. In case the cadastral details are not available an indicative data of breakup of government, private and forest land
	(iv)	Mineral(s) under investigation or granted under licence or lease
5.	Physiography and environment (Data to be furnished up to five km. radius from the peripheral boundary of project area in case of G3, G2 and G1 stage of exploration)	
	(i)	Relief of the area with minimum and maximum elevation, drainage pattern, natural watercourses, reservoirs, etc.
	(ii)	Roads, railway track, electric transmission line, telephone line, etc., passing through the area or nearby
	(iii)	Host population (local tribes), Human settlements within and nearby the area
	(iv)	Socio Demographic profile of the area and nearby
	(v)	Historical sites and archaeological monuments, places of worship, public utilities etc. within or near by
	(vi)	Forests, sanctuaries, national park and wild life sanctuaries; grazing land and gochar land within or near by the area with distance from periphery of the area explored.
	(vii)	Flora and Fauna within and nearby
	(viii)	Water bodies such as river, nala, stream, reservoir, etc., within or nearby
	(ix)	Climatic conditions: (a) Temperature (annual) min_max____Avg____ (b) Rain fall (annual) min_max____Avg____ (c) Humidity (annual) min____max____Avg____
	(x)	Any other physiographic, social and environmental factor having potential to affect the viability of the project and assessment of resources and reserves.
6.	Infrastructure	
		Local infrastructure with roads, railways, port facilities, electricity, water etc. with distance from the area. Details of nearby industries in the area which may use the mineral commodity likely to be mined.

Sl. No.		Criteria with parameters of reporting
7.		Geology
	(i)	Brief regional geology of the area outlining the broad geological, stratigraphical and structural frame work.
	(ii)	Local geological setting detailing the common rock types, controls of mineralization, details of old workings if any, surface exposures, etc., of the area under study also of adjoining nearby areas, if the information is likely to have an impact on the area under study.
	(iii)	Structural details of the area such as dip, strike, folds, faults, etc.
	(iv)	A discussion on the type of the deposit based on the style of mineralisation and minerals under investigation. Suggested exploration plan with spacing of the sampling points and depth of exploration commensurate with the stage of exploration.
	(v)	The extent and variability of the mineralisation expressed as length (in meter) (along strike or otherwise), plan width, and depth below surface to the upper and lower limits of the Mineral Resource.
8.		Previous Exploration
	(i)	Name and address of prospecting agency or permit holder or licensee involved in the exploration of the area with year and period of exploration (if more than one agency is involved details to be given separately for each agency)
	(ii)	Brief details of the exploration carried out (to be given separately for each agency)
	(iii)	Reserves or resources estimated, if any, during the previous exploration campaign with quantity and grade under various categories
9.		Aerial or ground geophysical or geochemical data
		Details of aerial, ground geophysical and geochemical survey taken up and their results.
10.		Exploration undertaken during current investigation
	(i)	Details of pitting, trenching, drilling, etc., with spacing and distribution of the sample points along with geographical co-ordinates.
	(ii)	Data spacing for reporting of exploration results: Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the mineral resource estimation procedure(s) and classifications applied.
11.		Location of data point
	(i)	Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys, azimuth, inclination, coordinates of bore holes etc), trenches, mine workings and other locations used in mineral resource estimation.
	(ii)	Quality and adequacy of topographic control.
12.		Sampling technique
		Nature and quality of sampling (eg. cut channels, random chips, etc.) and measures taken to ensure sample representation.
13.		Drilling technique and drill sampling employed
	(i)	Drill type (eg. core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc.) and details (eg. core diameter, triple or standard tube).
	(ii)	Whether core and chip sample recoveries have been properly recorded and results assessed.
	(iii)	Measures taken to maximise sample recovery and ensure representative nature of the samples.
	(iv)	Whether a relationship exists between sample recovery and grade and whether sample bias could have occurred due to preferential loss or gain of fine or coarse material.
	(v)	Logging: -Whether core and chip samples have been logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.
	(vi)	Discussion on the analysis results of handheld X-ray fluorescence (XRF), if used in the investigation.
14.		Sub-sampling techniques and sample preparation
	(i)	If core, whether cut or sawn and whether quarter, half or all core taken.
	(ii)	(a) If non-core, whether riffled, tube sampled, rotary split, etc., and whether sampled wet or dry. (b) For all sample types, the nature, quality and appropriateness of the sample preparation technique.
	(iii)	Quality control procedures adopted for all sub-sampling stages to maximize representation of samples.
	(iv)	Measures taken to ensure that the sampling is representative of the in-situ material collected.
	(v)	Whether sample sizes are appropriate to the grain size of the material being sampled.
15.		Quality of assay data and laboratory tests
	(i)	(a) The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total. (b) Nature of quality control procedures adopted (eg. standards, blanks, duplicates, external

Sl. No.		Criteria with parameters of reporting
		laboratory checks) and whether acceptable levels of accuracy (ie. lack of bias) and precision have been established. (c) Check analysis of at least 10% of samples should be analyzed from third party National Accreditation Board for Testing and Calibration Laboratories (NABL) accredited or Department of Science and Technology (DST) or Bureau of Indian Standards (BIS) recognized laboratories or government laboratories for assessing the acceptable levels of accuracy. (d) Security and chain of control of samples should be clearly mentioned.
16.		Moisture Whether the tonnages are estimated on a dry basis or with natural moisture, and the method of determination of the moisture content.
17.		Bulk Density Whether assumed or determined. If assumed, the basis for the assumptions. If determined, the method used, whether wet or dry, the frequency of the measurements, the nature, size and representativeness of the samples.
18.		Beneficiation studies as may be required Details of beneficiation studies carried out at laboratory scale or bench scale involving bulk sampling tests to understand and suggest technological factors for optimum recovery of explored mineral commodity, any additional by-products or co-products that may be available in the ore which is recoverable should also be discussed. The detailed flow sheet with yield recovery factors and to be discussed
19.		Resource estimation techniques
	(i)	Discussion on sufficient data density to assure continuity of mineralisation and synthesis adequate data base for estimation procedure used.
	(ii)	Whether previous exploration data has been used and integrated with the current exploration data for assessment of the updated resources.
	(iii)	The nature and appropriateness of the estimation technique(s) applied and key assumptions, including treatment of extreme grade values, domaining, interpolation parameters, maximum distance of extrapolation from data points
	(iv)	The basis for the classification of the mineral resources into varying confidence classes.
	(v)	The assumptions made regarding recovery of by-products.
	(vi)	Detailed description of the method used and the assumptions made to estimate tonnages and grades (section, polygon, inverse distance, geostatistical, or other method).
	(vii)	Description of how the geological interpretation was used to control the resource estimates.
	(viii)	Discussion of basis for using or not using grade cutting or capping. If any computer software was used for estimation of resources then name of the software with the version and method chosen, description of programmes and parameters used.
	(ix)	Geostatistical methods are extremely varied and should be described in detail. The method chosen should be justified. The geostatistical parameters, including the variogram, and their compatibility with the geological interpretation should be discussed. Experience gained in applying geo-statistics to similar deposits should be taken into account.
	(x)	Data verification or validation procedures used, including peer review report.
20.		Reporting of resources Basis of reporting of resources into various classes. The criteria and methods used for the classification to be specified. The quantities with grades, for each class are to be specified. The average grade under each class is to be specified. Grade wise classification should also be reported under suitable cases. In case of metallic deposits such as gold, precious metals and base metals the metal content is to be specified and resources should be estimated at various cut off grades. Factor, if any, applied to take care of the confidence level from the actual estimates should also be specified. The inferred, indicated and measured resources should be highlighted in a table.
21.		Summary and recommendations
	(i)	(a) A discussion on the outcome of the exploration work detailing the nature of the deposit, the dimension of the deposit, general structural trend, depth of occurrence and depth up to which exploration has been done, possibility of continuity of mineralisation beyond the depth of exploration and future exploration requirements, if any. (b) The resources estimated under various classes with grade. (c) The possibility of economic extraction based on present technological, environmental, social and market conditions. (d) Hindrances, if any, anticipated in the economic extraction of the deposit.
	(ii)	Discussion on the suggested future plan or strategy for the deposit for further exploration and mining.

Sl. No.	Criteria with parameters of reporting
22.	Plates and maps
(i)	Location plan of the area on 1:50000 showing various topographic and physiographic features nearby the project site.
(ii)	Topographic Map/ Cadastral plan on 1:4000, if available.
(iii)	A physiography or surface topography plan showing various topographical and physiographical features.
(iv)	Surface geological plan on appropriate scale showing reliable geological map of appropriate scale with Differential Global Positioning System (DGPS) - global coordinates of the corner points showing major lithological units, structural and tectonic features; extent of surface mineralisation, structure, location of boreholes, pits, trenches, old workings, etc. If the area or part of it has been covered under exploration earlier then the same with the location details should be shown in a map in appropriate scale.
(v)	Cross sections at suitable intervals showing vertical projections of litho-units and mineralisation.
(vi)	Level plan or slice plan at suitable intervals showing horizontal projections of mineralisation, if necessary.
23.	Annexures or enclosures to the report
(i)	The report shall include all relevant data including maps, sections, logs, analysis reports, photographs, etc., in support of the estimates made.
(ii)	In case of a Prospecting Licences or Reconnaissance Permit, all relevant orders of grant, execution of licence, permissions to carry out exploration from forest department, Letter of Intent, etc., shall also form part of the report.
24.	Any other information
	Any other information as may be available or required by any authority as prescribed
25.	Certificate from the qualified person with name, date and signature.

Part-II B

Contents of Prefeasibility Report

Contents of a Prefeasibility Report for Estimation and Reporting of Minor Mineral Reserves based on a Geological Report prepared as per Part-I. For minor minerals which are mostly industrial minerals such factors as quality and marketability are important and should be carefully considered before declaring Mineral Reserves. The Geological Study Report shall also form a part of the Prefeasibility Report. The report may incorporate among other things, the following contents:

Sr.no.	Contents	Explanation
1	Mineral Resource estimate for conversion to Mineral Reserve.	(a) Description of Mineral Resource estimate used as a basis for the conversion to a Mineral reserve. (b) Clear statement as to whether the Mineral Resources are reported additional to, or inclusive of, the Mineral Reserves. (c) The type and level of study undertaken to enable Mineral Resources to be converted to Mineral Reserves i.e. Prefeasibility/Feasibility level.
2	Cut off Parameters.	The basis of the adopted cut-off grade(s) or quality parameters applied, including the basis.
3	Mining factors or assumptions.	(a) The method and assumptions used to convert the Mineral Resource to a Mineral Reserve (i.e. either by application of appropriate factors by optimization or by preliminary or detailed design supported with Conceptual plan for mining). (b) Anticipated Ore to OB ratio, mine recoveries, dilutions etc. (c) The choice of, the nature and the appropriateness of the selected mining method(s), the size of the selected mining unit (length, width, height) and other mining parameters including associated design issues such as pre-strip, access, etc. (d) The assumptions made regarding geotechnical parameters (eg. pit slopes, stope sizes, etc.), grade control and pre-production drilling. (e) The major assumptions made and Mineral Resource model used for pit optimization (if appropriate). (f) The mining dilution factors, mining recovery factors, and minimum mining widths used.

Sr.no.	Contents	Explanation
		(g) The infrastructure requirements of the selected mining methods. Where available, the historic reliability of the performance parameters.
4	Cost and revenue factors.	(a) The derivation of, or assumptions made, regarding projected capital and operating costs. (b) The assumptions made regarding revenue including head grade, metal or commodity price(s) exchange rates, transportation and treatment charges, penalties, etc. (c) The allowances made for royalties payable, both Government and private. (d) Basic cash flow inputs for a stated period. (e) Yearly planned production, Net Present Value (NPV) and Internal Rate of Return (IRR) of the deposit, intrinsic value of the deposit based on annual projected production.
5	Market assessment.	(a) The demand, supply and stock situation for the particular commodity, consumption trends and factors likely to affect supply and demand into the future. (b) For industrial minerals the customer specification, testing and acceptance requirements prior to a supply contract.
6	Other modifying factors.	(a) The effect, if any, of natural risk, infrastructure, environmental, legal, marketing, social or governmental factors on the likely viability of a project and/or on the estimation and classification of the Mineral Reserves. (b) The status of titles and approvals critical to the viability of the project, such as quarry leases, discharge permits, government and statutory approvals. (c) Environmental descriptions of anticipated liabilities. Location plans of mineral rights and titles."

18. In the said rules, in SCHEDULE V,-

(I) at serial number 1 under heading "Designated Officer" related to Commissioner of Geology and Mining (CGM),-

(i) in rule number 8 under heading "Rule Number", in entry relating to "Grant procedure" under heading "Rule Name", in entry under heading "Rule Reference", before the words and brackets "Sub-rule (2)", the words, brackets and comma "Sub-rule (1A)," shall be inserted.

(ii) in rule number 9 under heading "Rule Number", in entry relating to "Upfront Payment for Quarry Lease", under heading "Rule Name", in entry under heading "Rule Reference", for the words and brackets "Sub-rule (2) (a)", the words and brackets "Sub-rule (2)" shall be substituted;

(iii) after rule number 15 under heading "Rule Name", the following entries shall be inserted, namely:-

"16C	Grant of Quarry Lease	Sub-rule (1) with prior approval of the Government, sub-rule (2)"
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(iv) in rule number 42 under heading "Rule Number", in entry relating to "Surrender of the quarry lease" under heading "Rule Name", in entry under heading "Rule Reference", after the words and brackets "sub-rule (1)", the words and brackets "proviso to sub-rule (1) with prior approval of the Government" shall be added;

(v) in heading "Applicability", after rule number 45 under heading "Rule Name", the following entries shall be inserted, namely:-

"Schedule-I	Evidence of Mineral Resources	Clause (4)"
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(II) at serial number 2 under heading "Designated Officer" related to "District Collector",-

(i) in rule number 8 under heading "Rule Number", in entry relating to "Grant procedure" under heading "Rule Name", in entry under heading "Rule Reference", before the words and brackets "Sub-rule (2)", the words, brackets and comma "Sub-rule (1A)," shall be inserted.

(ii) in rule number 9 under heading "Rule Number", in entry relating to "Upfront Payment for Quarry Lease" under heading "Rule Name", in entry under heading "Rule Reference", for the words and brackets "Sub-rule (2) (a)", the words and brackets "Sub-rule (2)" shall be substituted;

(iii) after rule number 15 under heading “Rule Name”, the following entries shall be inserted, namely:-

“16C	Grant of Quarry Lease	Sub-rule (1) with prior approval of the CGM, sub-rule (2)”
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(iv) in rule number 42 under heading “Rule Number”, in entry relating to “Surrender of the quarry lease” under heading “Rule Name”, in entry under heading “Rule Reference”, after the words and brackets “sub-rule (1)”, the words and brackets “proviso to sub-rule (1) with prior approval of the CGM” shall be added;

19. In Form A, for the words and figures, “Block number 1, 7th Floor, Udhog Bhavan, Sector 11”, the words and figures, “Block number 15, Dr. Jivraj Mehta Bhavan, Sector 10” shall be substituted.

20. In the said rules, after Form A, the following form shall be inserted, namely;

“Form-A1

(See Chapter-IIA)

Application for Quarry Lease

(under Chapter-IIA of the Gujarat Minor Mineral Concession Rules, 2017)

Received at.....(Place).....at.....a.m./p.m. on the day of.....Entered in the Register at No.....on page

Signature and designation of

Receiving Officer

From:.....

.....

.....

To,

.....

.....

.....

Dated the.....

Sir,

1. I/We submit an application for quarry lease for (mineral) for a term of.....years over.....hectares of land in the area specified in the Annexure hereto appended.

2. A sum of Rs.....payable as fee for the grant of such lease under Chapter-IIA of the Gujarat Minor Mineral Concession Rules 2017 has been paid in the Government Treasury at..... and the receipted Challan is enclosed.

3. The required particulars are given below:

Name of applicant, stating whether he or it is an individual or company.....

(i) Nationality of the individual or place of registration or incorporation of company.....

(ii) Profession of the applicant.....

(iii) Address of the applicant.....

(iv) Minor mineral/minerals which the applicant intends to quarry.....

(v) Owner of the Land or Holder of Consent.....

(vi) Particulars of the areas, mineralize, within the State for which the applicant or any person jointly in interest with him.

(a) already holds a quarry lease.....

(b) has already applied for a quarry lease but not granted.....

(c) being applied for simultaneously.....

(d) nature of joint interest, if any.....

(vii) Means by which the mineral/minerals is/are to be raised i.e. whether manual or mechanical.....

(viii) Manner in which the mineral raised is to be utilized.

(a) for manufacture.....

(b) for sale.....

(c) any other purpose.....

(ix) Details of the plan of the area applied for to be enclosed.

(The plan should be on the relevant portion of the cadastral village map with scale and should contain natural features, landmarks or other features to enable identification of the area in the field, the nearest railway station, or any other place of importance)

(x) Is the area applied for in a contiguous block.

(xi) Has the applicant any previous experience in quarry? If yes, details should be given.....

(xii) Financial resources of the applicant

(xiii) Total investment in the operations anticipated.....

(xiv) Particulars of the receipted treasury Challan for the fee.....

(xv) Any other particulars which the applicant wishes to furnish.

Annexure

1. Name of village.

2. Details of the area applied for in each Survey Number

3. Full description of the area applied for with regard to natural features.

4. District.

I/We hereby declare that the particulars furnished above are correct and am/are ready to furnish any other details, plans etc. as may be required by you.

Place

Yours Faithfully,

Date:

Signature of applicant

N.B.- If the application is signed by the holder of consent, an affidavit of the owner of land giving consent to the applicant should be attached.”

By order and in the name of the Governor of Gujarat.

K. H. PATHAK,

Deputy Secretary to Government.

